

**Notice of Allowability**

Application No.

10/506,654

Examiner

TAN N. TRAN

Applicant(s)

HORENSTEIN, MARK N.

Art Unit

2826

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed on 06/21/07.
2. ☒ The allowed claim(s) is/are 1-13 and 16-31.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application                     |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                   |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance  |
|  | 9. <input type="checkbox"/> Other _____   |

## DETAILED ACTION

### EXAMINER'S AMENDMENT

1. Cancel the non-elected claims 14,15. (Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).)

### Reasons for Allowance

2. The following is an examiner's statement of reasons for allowance:

Claims 1 and 16 include the limitation "means for linearizing the relationship between V and X." This limitation clearly invokes 35 USC § 112 ¶ 6, because it uses the term "means for" unmodified by any structural limitation. "Means for linearizing the relationship between V and X" is thus limited to "the corresponding structure, material, or acts described in the specification and equivalents." 35 USC § 112 ¶ 6. Applicant describes only one structure for "linearizing the relationship between V and X." Applicant explains, in paragraphs 0025-0026 of the specification, that the linearizing relationship is performed by a series of switches, shown as parts 80, 82, and 84 in figure 5:

[0025] As illustrated in FIG. 5, each of the electrodes 14 is segmented into a plurality of electrode segments 60, 62, and 64 each of increasing area with a ratio of increase between each successively larger segment being a factor of two, from the smallest, first electrode segment 60 to the largest, nth electrode segment 64. While FIG. 5 illustrates only three electrode segments 60-64 it is to be understood in the application of the invention to a real structure there could be a larger number of electrode segments depending upon the desired resolution and the acceptable

expense for the array and distribution circuitry to convert the incoming voltage, typically in digital binary form to separate ones and zeroes for each electrode segment 60-64 application lead 66. Each lead 66 is fed with a signal from corresponding data lines 70, 72 and 74. For example, if an 8-bit data word or byte is used, representing 256 possible data states or voltage levels, there will be eight electrode segments 60-64 and corresponding data leads 70-74 corresponding to the individual zero and one bit positions in the data word. By activating a select combination of the electrode segments it is possible to achieve the corresponding voltage effect in 256 resolution steps. The digital ones and zeroes operate through control switches 80, 82 and 84 which may be integral to the structure. The digital ones and zeroes representing the desired deflection of said actuator 20 are carried on input lines 70,72,74 and are obtained from the output of a digital control device such as a computer, microprocessor, microcontroller, or logic circuit. The number of digital bits of said digital signal corresponds to the number of electrodes 60-64 included in the system. Each of the switches 80-92 is activated by one digital line 70,72,74 of the digital signal, with the line 70 corresponding to the least significant bit (LSB) connected to the switch 80 and, in turn, the electrode segment of smallest area, and the line 74 corresponding to the most significant bit (MSB) connected to the switch 84 and, in turn, the nth electrode segment of largest area. [0026] The effect of the linearization achieved through the use of switches 80-84 is to linearize the transfer function illustrated in FIG. 3A to the form illustrated by curve 90 in FIG. 6. This is linearized to the extent that the curve is substantially flattened and can be adjusted to have end points fitted to the end points of a fully linearized transfer function illustrated by curve 92.

Claims 1 and 16 can therefore only be met by a device having, as part of its structure, switches such as Applicant's switches 80, 82, and 84, or structural equivalents thereof (note that a device performing a function equivalent to the function performed by switches 80, 82, and 84 is not an equivalent structure for purposes of paragraph 6. Only structural equivalents are paragraph 6 equivalents). Because none of these references disclose or can be combined to form a structural equivalent to the structure Applicant discloses for performing the paragraph 6 function, the claims are allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled ""Comments on Statement of Reasons for Allowance.

Application/Control Number:  
10/506,654  
Art Unit: 2826

Page 4


3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TAN N. TRAN whose telephone number is (571) 272-1923. The examiner can normally be reached on 8:30-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, PURVIS SUE can be reached on (571) 272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TT

Jan 2008

  
THOMAS DICKEY  
PRIMARY PATENT EXAMINER